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Does pandemic denial help or harm? Belief in and experience of COVID-19 as factors affecting psychological consequences of using neurotic defence mechanisms

Zaprzeczanie pandemii – pomaga czy szkodzi? Wiara w COVID-19 i jego doświadczenie jako czynniki wpływające na psychologiczne konsekwencje stosowania neurotycznych mechanizmów obronnych

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Abstract

Objective: The COVID-19 pandemic may activate thoughts of death, leading to aversive psychological states. In such situations, defence mechanisms emerge; however, their adaptability depends on many factors. The aim of the study was to investigate the relationship between neurotic defence style and depressive symptoms. We assumed that the sense of coherence underlies this correlation and investigated how both believing (or not) in COVID-19 and having (or not) experience of this disease differentiate this mechanism. **Methods:** This cross-sectional study ($N = 720$) was conducted through an online panel. **Results:** For COVID-19 believers who had no experience of the disease, the higher their neurotic defence style, the lower their sense of coherence, which was negatively correlated with depressive symptoms. The same pattern was found for non-believers who have experienced COVID-19. In the group of individuals who believed and experienced COVID-19, the relationship between neurotic defence style and sense of coherence was non-significant. In turn, respondents who neither believed in nor have experienced COVID-19 displayed a positive relationship between neurotic defence style and sense of coherence. **Discussion:** Although self-deception strategies might be adaptive, they contribute to increased distress, if continued to be used once an individual confronts reality.

Keywords: mental health, depression, ego defence mechanisms, stress, personality

Streszczenie

Cel badania: Pandemia COVID-19 może aktywować lub nasilić myśli o śmierci, prowadząc do niepożądanych stanów psychicznych. Mogą się wówczas pojawić mechanizmy obronne ego, których adaptacyjność zależy od wielu czynników. Celem badania było zbadanie związku pomiędzy neurotycznym stylem obronnym a nasileniem objawów depresyjnych. W badaniu testowano, czy poczucie koherencji leży u podstaw tego związku oraz jak wiara (bądź niewiara) w COVID-19 i doświadczenie tej choroby (bądź jego brak) różnicują ten mechanizm. **Metoda:** Badanie przekrojowe ($N = 720$) przeprowadzone za pośrednictwem panelu internetowego. **Wyniki:** Wśród osób, które wierzyły w pandemię COVID-19, lecz nie doświadczyły choroby wywołanej wirusem COVID-19, neurotyczny styl obrony korelował ujemnie z poczuciem koherencji, które z kolei ujemnie wiązało się z objawami depresji. Podobny wzorec zaobserwowano u osób, które nie wierzyły w pandemię, aczkolwiek doświadczyły tej choroby. W grupie osób, które zarówno wierzyły w pandemię COVID-19, jak i doświadczyły choroby wywołanej tym wirusem, związek między neurotycznym stylem obrony a poczuciem koherencji okazał się nieistotny. Z kolei u osób, które ani nie wierzyły, ani nie doświadczyły choroby wywołanej wirusem COVID-19, związek neurotycznego stylu obronnego i poczucia koherencji okazał się pozytywny. **Omówienie:** Strategie związane z samooszukiwaniem się służą adaptacji do sytuacji stresującej. Jednak kontynuowane mimo konfrontacji z rzeczywistością mogą wręcz przyczynić się do zwiększonego poziomu dystresu.

Słowa kluczowe: zdrowie psychiczne, depresja, mechanizmy obronne ego, stres, osobowość

INTRODUCTION

The outbreak of the COVID-19 pandemic might be viewed as a critical negative life event posing a dire threat to human lives. It causes both conscious and unconscious activation of death thoughts (terror management theory – Greenberg et al., 1986), which, in turn, lead to aversive psychological states (Pyszczynski et al., 2021) and poor mental health. The threat degree of COVID-19 has significant correlations with, *inter alia*, depression (e.g. Bodecka et al., 2021; Ettman et al., 2020; Gambin et al., 2021).

When resources cannot be found to remain resilient or it is impossible to modify the environment, people might attempt to distort reality in order to defend their self-concepts against esteem threats and maintain the preferred view of the world and self (Baumeister et al., 1998). The ego might activate its defence mechanisms (Bond, 2004; Vaillant, 2011), i.e. automatic responses to stress that help individuals manage psychological distress and facilitate coping (Cramer, 2006). The transition cycle (Adams et al., 1976) shows that numbness, disbelief and minimising are the survivors' natural responses to a negative experience. Recovery from crises depends on whether they accept the reality (and go through the depression phase) or continue to live in illusion and develop severe depressive symptoms. However, the relationship between defence mechanisms and depression is complex and remains uncharted in literature.

Although all defence mechanisms serve the same purpose, i.e. to protect an individual from direct combat with threatening or anxiety-provoking life events (Cramer, 2006), a hierarchy of defences exists (e.g. Cramer, 2008; Vaillant et al., 1986). The fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2000) differentiated between essentially non-adaptive and relatively adaptive defences. Alternatively, the factorial model developed by Andrews et al. (1993) identified mature, immature, and neurotic defence styles. While mature and immature factors are similar to the adaptive/maladaptive dichotomy, the neurotic style also includes defences (undoing, pseudo-altruism, idealisation and reaction formation; see Baumeister et al., 1998) that are intermediate between them. The essence of the latter one is the suppression of negative emotions through self-deceiving, self-sacrifice, and image-distortion (Bond, 1986). Its main function is to block the fear related to experiencing complex feelings, which may lead to affective disorders (Blaya et al., 2006).

The psychological consequences and adaptability of the neurotic style may be more dependent on circumstances compared to mature and immature styles, and for this reason we focused on them in the current study. There is also evidence that neurotic defences play a critical role in mediating the psychological effects of the COVID-19 pandemic, i.e., repression allows to avoid exposure to information about the dangers of COVID-19; dissociation allows to disconnect from negative experiences, memories, thoughts, sensations, and even their identities during the pandemic;

reaction formation leads to the expression of the opposite of their real feelings and emotions and displacement allows to express anger and blame family members or others for COVID-19 infection (Altwaijri et al., 2022).

Neurotic defence style contributes positively to individual's psychological and social functioning (e.g. Ciocca et al., 2015; Waqas et al., 2018). It coexists with the self-transcendence style (Evren et al., 2012) that helps to manage suffering and death (Cloninger et al., 1993; see also findings on the protective role of reaction formation – De-Nour et al., 1968). At the same time, the neurotic defence style is comorbid with depression (Albuquerque et al., 2011; Calati et al., 2010). Furthermore, both of these are reduced simultaneously in psychotherapy (Khademi et al., 2019) as a more accurate perception of the world and self is restored in the patient. Hence, the latter may be a path through which changes in defence mechanisms translate into changes in depression. Sense of coherence (SoC) is one of the most important factors associated with a more realistic perception of reality (Antonovsky, 1987). Its components include the conviction that the available coping resources are sufficient (manageability), emotional involvement in dealing with adversities (meaningfulness), and an accurate perception of the meaning of one's own life events (comprehensibility) (Antonovsky, 1993). SoC helps individuals choose a particular coping strategy that is the most appropriate under given circumstances. Moreover, people with strong SoC define stressors as mild and usually assume that the emotional tension will soon dissipate. They often consciously experience sadness, anger, and regret, despite their ability to focus on a problem. Conversely, people with weak SoC experience shame, discouragement, and anxiety which paralyse their actions (Antonovsky, 1987).

Although SoC is supposed to remain relatively stable after the age of 30 years (Antonovsky, 1993), it can be reinforced during psychotherapy (Szymona, 2005) and distorted by stress (Breslin et al., 2006) also during the pandemic (Schäfer et al., 2020). Since the COVID-19 pandemic is described as “a lonely pandemic” (Hartt, 2021) as a result of repetitive lockdowns and social distancing measures, its impact on mental health may be very strong. Thus, SoC and its components may change for individuals during this time (Kanekar and Sharma, 2020; Schäfer et al., 2020); the resources available previously are lost, thus limiting manageability, and changes in lifestyle coupled with uncertainty of the future may distort comprehensibility. However, the change in SoC may depend on the perception of the new pandemic reality that is allowed by defence mechanisms.

PRESENT STUDY

Sense of coherence relates to a lower tendency to use less mature defence strategies (Sammallahti et al., 1996). At the same time, negative beliefs are associated with depressive style (i.e. a negative view of the self, the world, and the future – Beck, 1979). Weak SoC is one of the most important

predictors of depression (Carstens and Spangenberg, 1997; Sairenchi et al., 2011; Skärsäter et al., 2009), also during the pandemic (Généreux et al., 2020). Although research on the mediating effect of SoC in the relationship between neurotic defence style and depressive symptoms is lacking, it might be hypothesised that such an effect may occur based on the presented findings. Moreover, a question arises: what circumstances promote this mechanism?

Regardless of whether one consciously believes that the virus is a major threat to life or only a minor inconvenience, fear of death plays an important role in shaping one's attitudes and behaviour related to the virus (Pyszczynski et al., 2021). That is why one can either face the reality or suppress negative emotions by self-deceiving, and deny existence of reality.

The neurotic style may coexist with immature strategies (Lingiardi and McWilliams, 2015; McWilliams, 2011), i.e. in addition to neurotic strategies, immature ones (e.g. denial) may appear, if the former fail to fulfil their function and do not adequately protect the ego. They involve reorganising external experiences to reduce the need to adjust to reality. Furthermore, pandemic denial may alter the primary relationship between neurotic mechanisms and depressiveness and, in consequence, indicate their adaptability (i.e. lower intensity of depression) and sometimes maladaptiveness (i.e. higher intensity of depression).

We hypothesised that when people accept reality (believe in COVID-19), their neurotic defence style would be related to lower SoC, thus predicting depressive symptoms. However, a group of people using self-deceiving strategies would have a stronger neurotic form of defence that would relate to higher SoC, which in turn would lead to lower depressive symptoms, thus reflecting their control over unpredictable reality.

Additionally, we controlled for the experience of COVID-19 (see Fig. 1). Both believing in COVID-19 and having the experience of it (ourselves or through a proximate social group) can be a powerful and life-threatening event, which may require even more cognitive resources to deal with and possibly lead to even greater depressive symptoms. However, a group of individuals who do not believe in COVID-19 despite having experienced it is a particularly interesting scenario for investigation. Integrating such opposing facts and beliefs is cognitively demanding; therefore, we aimed to explore the psychological consequences also in this group.

MATERIALS AND METHODS

Participants

Participants were recruited from the general population ($N = 720$; 71.9% women) and were between 25 and 45 years of age ($M = 34.37$, standard deviation, $SD = 5.71$). The sample size allowed for detection of an effect of partial R^2 increase of 0.05, $\alpha = 0.05$ with a power of 0.99 according to the power analysis using G*Power 3.1 software (Faul et al., 2009).

The study was conducted on the Internet by a nationwide research panel. Each panel volunteer collects points for each study he or she participates in within a specified timeframe. The points are summed up and can be exchanged for a prize chosen from the list.

Participants were from Poland and of a self-reported Caucasian ethnic classification. The majority of participants (42.1%) came from large cities (with 100,000 or more inhabitants), 32.8% were from medium or small cities and 25.1% were from rural regions. As for education level, 56.7% of respondents had a bachelor's or master's degree, 33.2% participants completed high school, 5.7% had a vocational education, and 2.3% had either a primary or lower secondary education. The respondents were informed of the nature of the study they were partaking in and gave their consent.

The study was part of a larger research project. Results of investigations testing unrelated hypotheses are reported elsewhere. The data for the entire project are available at apsycholab.pl (Downloads section).

Measures

We used the Polish translation (Majkovicz and Chojnacka-Szawłowska, 1994) of the Hospital Anxiety and Depression Scale (HADS) (Zigmond and Snaith, 1983) to measure depressive symptoms. The questionnaire includes 2 subscales (depressive symptoms and anxiety symptoms) and consists of 14 items (7 for each trait). Participants are asked to read items and mark the appropriate answers that came closest to how they had felt during the previous week. The reliability of the depression subscale was $\alpha = 0.78$ (Watrowski and Rohde, 2014).

We used the Polish version (Sękowski, 2019) of Defense Style Questionnaire (DSQ-40) to measure the neurotic

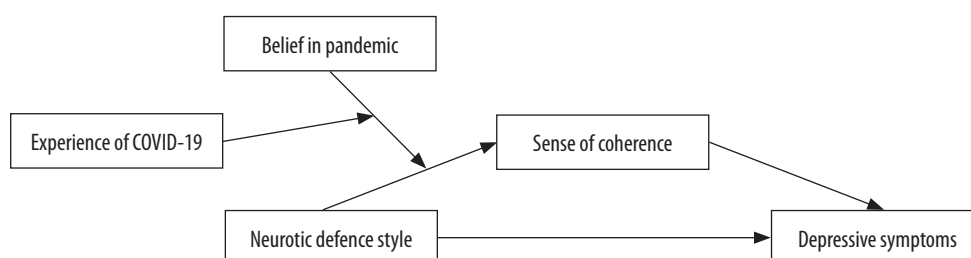


Fig. 1. A model of the moderated moderation of mediation

	Coefficient	SE	t	p	95% CI
Neurotic defence style	0.42	0.19	2.19	0.028	[0.04, 0.80]
Belief	-3.68	2.78	-1.32	0.18	[-9.15, 1.79]
Experience	-0.20	2.89	-0.07	0.94	[-5.88, 5.46]
Neurotic defence style × belief	-0.99	0.28	-3.45	0.001	[-1.55, -0.42]
Neurotic defence style × experience	-0.99	0.29	-3.38	0.001	[-1.57, -0.41]
Belief × experience	3.73	3.64	1.02	0.30	[-3.41, 10.89]
Neurotic defence style × belief × experience	1.40	0.38	3.65	<0.001	[0.64, 2.15]

Note: Belief – belief in pandemic; experience – experience of COVID-19.

Tab. 1. Regression coefficient for the moderated moderation model predicting SoC based on neurotic defence style, belief in pandemic (ref: 0 – not believing) and experience of COVID-19 (ref: 0 – no experience)

defence style (Andrews et al., 1993). The questionnaire consists of 40 items on a 9-point scale. It distinguishes between mature (8 items), immature (24 items) and neurotic (8 items) defence styles (Andrews et al., 1993). The reliability of the latter subscale was $\alpha = 0.68$.

The sense of coherence was measured with the SOC-29 Scale (Antonovsky, 1987). The questionnaire consists of 29 items rated on a 7-point scale. The internal consistency of the scale ranged from $\alpha = 0.82$ to $\alpha = 0.95$ (e.g. Antonovsky, 1987).

Belief in COVID-19 was verified with the question, “Do you believe in the global coronavirus pandemic of SARS-CoV-2?” The participants marked their answers on a yes–no scale.

To measure personal experience of COVID-19, we asked three questions: “Have you had COVID-19?”; “Do/did any of your loved ones have COVID-19?”; and “Has/Does anyone outside your immediate environment, whom you personally know, had/have COVID-19?”. The personal experience of COVID-19 indicator refers to answer(s) “Yes” or “No” to these questions. Answering “Yes” to at least one question meant having the personal experience of COVID-19 and was marked as “1,” while no personal experience of COVID-19 was marked as “0.”

RESULTS

We first conducted a zero-order Pearson correlation analysis between all variables included in the study and tested whether there were differences in the frequency of believers and non-believers depending on whether they experienced COVID-19. For preliminary results, see Supplementary Material.

Then, as the assumptions had been met, we tested the moderated moderation of the mediation model applying linear regression (Hayes, 2015, 2018; Preacher et al., 2007) with a PROCESS macro (Hayes, 2018). In the tested model, the neurotic defence style predicted depressive symptoms, but this relationship was mediated by SoC. Additionally, the effect of neurotic defence style on SoC was moderated by believing in COVID-19, and the neurotic defence style × believing interaction depended on experiencing COVID-19. Neurotic defence style was centred around the mean. The results indicated that the model was significant:

($R^2 = 0.031$, $F[7,712] = 3.20$, $p = 0.002$). The three-way interaction of neurotic defence style, believing in and experiencing COVID-19, and predicting SoC was also significant (R^2 change = 0.018, $F[1,712] = 13.37$, $p < 0.001$). Regression coefficients are presented in Tab. 1.

The interpretation of the three-way interaction with simple slopes showed that the interaction of belief in the pandemic and neurotic defence style was significant among individuals who had no experience of COVID-19 ($B = -0.99$, $F[1,712] = 11.92$, $p = 0.001$), but was not significant among those who experienced it ($B = 0.40$, $F[1,712] = 2.58$, $p > 0.10$). The interaction between individuals with and without experience of COVID-19 is presented in Fig. 2.

Further analysis of the simple slopes showed that the relationship between neurotic defence style and SoC in non-believers with no COVID-19 experience was significant and positive ($B = 0.42$, standard error, $SE = 0.19$, $t = 2.19$, $p = 0.028$, 95% confidence interval, CI [0.04, 0.80]), whereas this relationship was negative among believers with no experience of COVID-19 ($B = -0.56$, $SE = 0.21$, $t = -2.67$, $p = 0.008$, 95% CI [-0.98, -0.15]). When individuals who

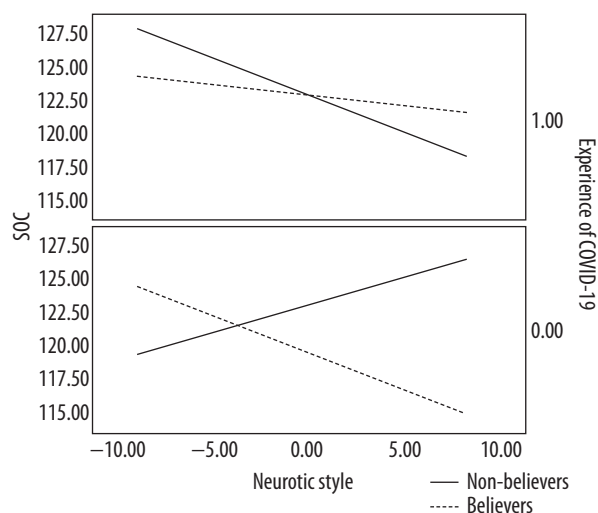


Fig. 2. Interactive effects of neurotic defence style and believing in COVID-19 on SoC in people with no experience of COVID-19 (0) (lower graph), and with experience of COVID-19 (1) (upper graph)

had experienced COVID-19 were considered, the correlation between neurotic defence style and SoC was negative and significant when they did not believe in the pandemic ($B = -0.57$, $SE = 0.22$, $t = -2.57$, $p = 0.010$, 95% CI $[-1.00, -0.13]$), but was insignificant when they believed in COVID-19 ($B = -0.16$, $SE = 0.12$, $t = -1.33$, $p > 0.18$, 95% CI $[-0.40, 0.07]$).

The results regarding mediation of the neurotic defence style's effect on depressive symptoms through SoC showed that the direct effect of neurotic style on depressive symptoms was positive and significant ($B = 0.06$, $SE = 0.01$, $t = 4.96$, $p < 0.001$, 95% CI $[0.03, 0.08]$). However, the effect of SoC on depressive symptoms was negative and significant ($B = -0.11$, $SE = 0.006$, $t = -21.09$, $p < 0.001$, 95% CI $[-0.12, -0.10]$). The analysis also showed that the indirect effects depended on moderators. The index of moderated moderation of the mediation was significant (Index = -0.16 , Boot $SE = 0.04$, Boot 95% CI $[-0.26, -0.07]$). Precisely, the index of conditional moderated mediation was significant only in participants without COVID-19 experience (Index = 0.11 , Boot $SE = 0.04$, Boot 95% CI $[0.04, 0.20]$), but was not significant for those with COVID-19 experience (Index = -0.05 , Boot $SE = 0.02$, Boot 95% CI $[-0.10, 0.003]$).

Further investigation of indirect effects showed that, among those who had no experience with COVID-19, an indirect effect through SoC was not significant for pandemic non-believers ($B = -0.05$, Boot $SE = 0.02$, Boot 95% CI $[-0.10, 0.002]$), but was significant in believers ($B = 0.06$, Boot $SE = 0.02$, Boot 95% CI $[0.01, 0.12]$). When individuals who had COVID-19 experience were considered, the indirect effect was significant in COVID-19 non-believers ($B = 0.06$, Boot $SE = 0.02$, Boot 95% CI $[0.02, 0.11]$), but was not significant in believers ($B = 0.02$, Boot $SE = 0.01$, Boot 95% CI $[-0.01, 0.05]$).

DISCUSSION

The main aim of the study was to investigate how believing in COVID-19, and also having experienced the disease oneself or in one's proximate social circle, changes the relations between neurotic defence style, SoC, and depressive symptoms. Among COVID-19 believers who did not experience the disease, neurotic defence style was negatively correlated with SoC, which was in turn negatively correlated with depressive symptoms. In this group, the experience of COVID-19 could not modify the relationship between neurotic defence style and depressive symptoms, nor influence the level of SoC. Thus, the patterns of these relationships are similar to those obtained in pre-pandemic studies (e.g. Sairenchi et al., 2011; Sammallahiti et al., 1996).

On the other hand, however, the relationship between neurotic defence style and SoC was non-significant among COVID-19 believers who experienced the disease. People in this group had already been exposed to the stressor since

they (or their loved ones) had been infected, which must have generated considerable tension. However, the magnitude of response to a specific stimulus is the highest before and during the first exposure to this stimulus and decreases with further experiences (see Thompson and Spencer, 1966). Moreover, the ability to overcome COVID-19 leads not only to immunity, but also to favourable psychological adaptations to the stressor (see Wu et al., 2013). Therefore, SoC was no longer needed to form a cognitive image of reality (explaining or distorting the incomprehensible world). When SoC is utilised, the adversities are viewed as challenges with which a person is able to cope (manageability), rather than as a burden (Antonovsky, 1993). Thus, alternatively, the powerful burdensome experience of the disease might not have allowed individuals to perceive the situation as a challenge, and SoC might not have displayed itself or even decreased (as was observed in Snekkvik et al., 2003). It is also possible that individuals faced with such a situation used the neurotic defence style regardless of their SoC level due to the fact that the life-threatening experience of COVID-19 might have favoured the processes that required less mental effort (hence more "automatic" and involuntary) and allowed them to shift attention away from the threat (Ellenbogen et al., 2002).

In line with our hypothesis, people who neither believed nor experienced COVID-19 displayed an interesting positive relationship between neurotic defence style and SoC. Disbelief in COVID-19 might be an exemplar of a general tendency for only partial awareness of reality or even self-deception similar to the neurotic defence style (Josephs, 2011; Wiley, 1998). It is argued in literature that self-deception might produce a false sense of control over events (Sahdra and Thagard, 2003). Denying the existence of COVID-19 might be a form of coping (Jutzi et al., 2020) that enables individuals to maintain a positive outlook on the world (e.g. by shaping comprehensibility of the situation by forming alternate theories about it or by enhancing manageability by believing that the threat does not exist), therefore empowering SoC. This confirms that milder manifestations of defence mechanisms are highly functional (Bowins, 2004).

However, our results also suggest that disbelief promotes SoC only when a person did not experience the disease. Among those who did not believe in COVID-19 but experienced the disease, the pattern of relationship was the same as for those who believed but did not experience COVID-19. Possibly utilising the self-deception strategy of disbelief in the case of the COVID-19 infection might threaten SoC: the convictions that the world is comprehensible (one's own beliefs were verified), manageable (the disease was experienced despite the lack of belief), and meaningful (involvement in coping cannot work in the case of such stressor). However, despite their experience of the illness, these people still did not believe in COVID-19: being persistent in their self-deception limited their SoC, which, in turn, worsens depressive symptoms.

LIMITATIONS AND CONCLUSIONS

Our study has several limitations and the results should be interpreted with a degree of caution. First, the survey was conducted online without full control over the attention of the respondents. Second, the respondents were recruited through a survey panel, which is associated with volunteering biases (Lehdonvirta et al., 2021). Third, the reliability of the neurotic style scale in our study was $\alpha = 0.68$, which was higher compared to Mrozowicz-Wrońska (2019) (Cronbach $\alpha = 0.57$) and compared to the original tool (see Andrews et al., 1993; $\alpha = 0.58$). However, its reliability is still problematic (i.e. lower than 0.70). Fourth, it was not possible to draw conclusions about causality from our cross-sectional study. All data was collected simultaneously and causal processes were assumed based on literature. The longitudinal study design is recommended as a perfect methodological approach to confirm the outcomes.

Despite these limitations, the results suggest that self-deception strategies are adaptive under some circumstances, but also contribute to increased distress if they continue to be used once the individual confronts reality.

Supplementary Material

Refer to Web version on www.psychiatry.com.pl for supplementary material.

Conflict of interest

The authors declare no conflict of interest.

Funding/Support and role of the sponsor

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Ethical statement

The project was approved by the Academic Human Research Ethics Committee at The Maria Grzegorzewska University.

Informed consent

Interested volunteers were informed about the nature and purpose of the study and offered the opportunity to participate. When they chose to participate, they were informed that they could discontinue at any time and their responses would be confidential and not revealed to anyone.

Availability of data and material

The data for this project can be found on apsycholab.pl (Downloads section).

Code availability

IBM SPSS Statistics 25.

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unrelated hypotheses are reported elsewhere. We would like to thank the Ariadna panel and all respondents who participated in this study.

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